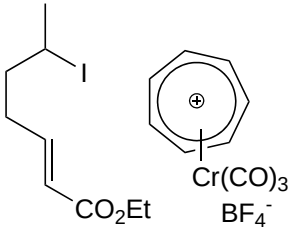


1. Zn, THF, $MeSi_3Cl$
2. CuCN, LiCl, -78 °C to 0 °C

A

150 °C

dioxane
[6+2]

B

tricyclic

B

1. LDA, THF-HMPA, MeI
2. DIBAL, THF, 0 °C
3. TsCl, py, 0 °C
4. $LiEt_3BH$, THF, 0 °C

C

1. mCPBA, CH_2Cl_2, 0 °C
2. H_2, Pd(C), MeOH (separation of epimers)
3. $MeO_2CNSO_2NEt_3$ (Burgess-reagent), PhH, 60 °C

D

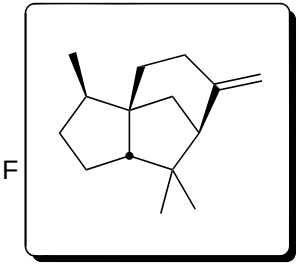
E

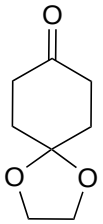
$Tl(ONO_2)_3$

MeOH, rt

F

1. H_3O^+
2. $NaBH_4$, EtOH, 0 °C
3. o-$NO_2C_6H_4SeCN$, Bu_3P, THF
4. H_2O_2, THF, rt



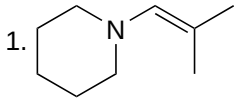


1. LDA, TMSCl, THF

2. $Pd(OAc)_2$, CH_3CN
O_2 atmosphere

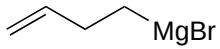
G

1.



TBDMSOTf,
CH_2Cl_2, -78 °C

2.



THF, -78 °C

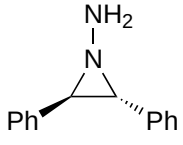
H

1. NaH, CS_2 then MeI

2. nBu_4NF

I

I



MeOH

J

1. nBu_3SnH, AIBN,
syringe pump, 20h

2. TsOH, MeOH

K

K

1. MeLi
2. $SOCl_2$, py

3. TsOH, CH_2Cl_2